

## Providing Stockwater in Fields and Near Streams

Tips for Small Acreages in Oregon

Times are changing. It used to be that livestock watered freely in ditches, ponds, and streams. Those days are over, as people understand how this practice can affect animal health, water quality, and wildlife habitat. It makes good sense to install a fence and an alternative watering system to protect surface water. Here's why:

- **Healthy animals.** An Oregon study showed that livestock prefer trough water over stream water. Livestock gain up to 30 percent more weight on clean water and graze more efficiently when troughs are distributed throughout pastures. When animals loaf in streams, they are at greater risk from algae toxins and water-borne diseases. Muddy areas near streams may also increase foot rot, leg injuries, and stress.
- **Clean water.** Clean water is essential to people, fish, and the environment. One study found five times the number of trout in streams with non-eroded banks verses those with eroded banks. When livestock deposit manure near or in water, the components of manure may be harmful. Phosphorus increases algae blooms, ammonia kills fish, and coliform bacteria sicken or kill people with weakened immune systems.
- **Wildlife habitat.** The trees, shrubs, and tall grass next to streams provide food and cover for 74 percent and 94 percent of western and eastern Oregon wildlife, respectively. One study found 89 bird species on ungrazed banks compared to two bird species (grackles and starlings) on grazed banks. Without stream fencing, livestock may trample grass nests, wade through spawning beds, and muddy the water.

The benefits of a fence and alternative watering system to protect surface water don't end on-site. The watershed is a big neighborhood where there will always be someone affected downstream. What's more, the law prohibits animal wastes from entering water and impacting those downstream. Many landowners are realizing the need for change and are looking at better watering alternatives that protect the health of their animals and the environment.

### You Can Lead Livestock to Water...

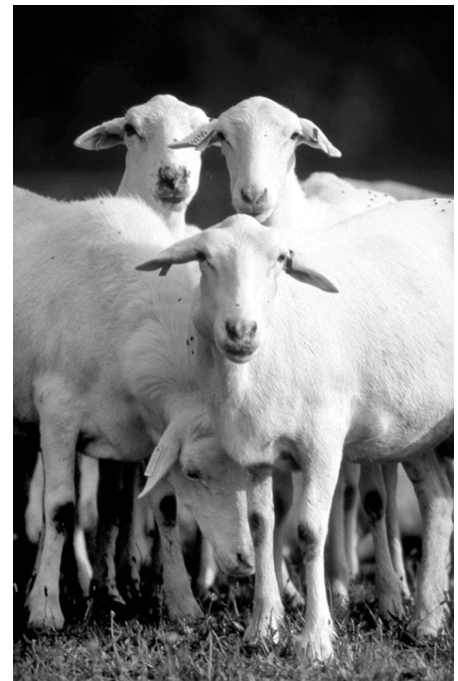
There's no one right structural "fix" for watering livestock. Every situation is different and it takes planning to get the right solution for you. The first step is to find out how much water your livestock drink. Water use depends on animal size, reproductive status, and weather. Plan according to the number of animals that you have or anticipate having.

Animal	Average drinking needs*
Dairy cow	27 gal/day
Beef cow	12 gal/day
Horse	12 gal/day
Pig	8 gal/day
Sheep	4 gal/day
Goat	4 gal/day

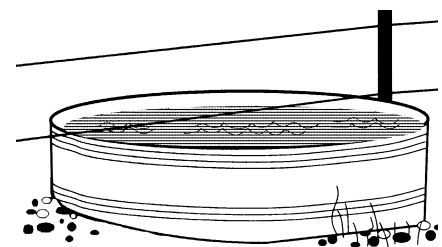
\*On hot days, animals may need twice as much water.

*"The frog does not drink up the pond in which he lives."*

- Indian proverb



USDA Agricultural Research Service



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*Single tank watering two pastures.*

## Location, Location, Location

The location of the watering site determines herding behavior and drinking patterns. Here are some suggested watering locations:

- **Less than 500 feet between water sources.**

If water is far away or located outside the pasture, then animals will travel as a herd to the water and drink as a herd. In a herd situation, livestock will graze unevenly, concentrate in the watering area, and "boss" animals may prevent timid animals from drinking. If this situation can't be avoided, be sure to have enough space at the water source for 10 percent of the herd to drink at any time. Each drinking animal should have 20 inches of space at a circular tank and 30 inches at a straight tank.

- **In each pasture.**

Animals tend to drink one at a time if water is provided in pastures 10 acres or less in size. A flow rate of 2-6 gallons per minute will keep a 25-to 35-gallon tank full. Change the tank location along the fence line to allow sod to recover in former watering areas. A trough in each pasture will keep animals and manure on the grass and out of the lanes.

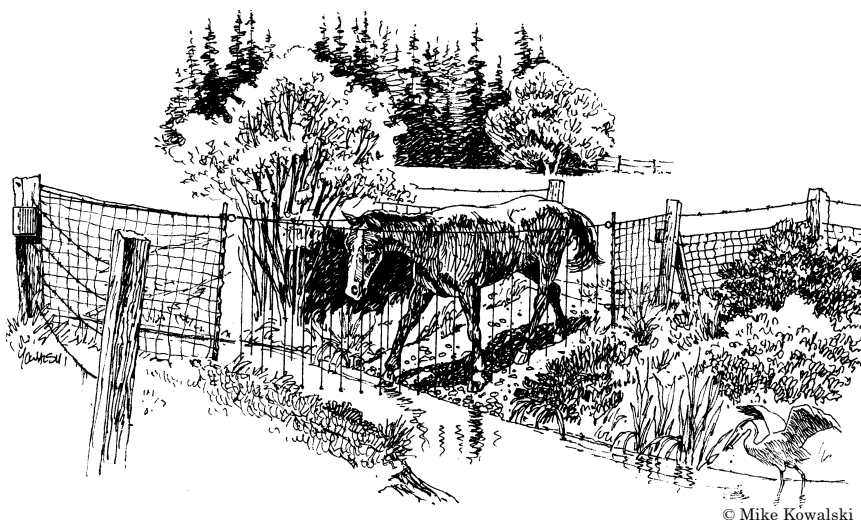
- **More than 100 feet from open water.**

Animals concentrate manure and mud at watering sites. This can create "hot spots" for erosion and polluted runoff. Leave a healthy buffer between watering sites and watercourses.

- **Away from feed, minerals, and shade.**

Distribute these items through the pasture. This will discourage loitering in one area and disperse grazing. Provide water outside the barn, or livestock may stay in the barn on hot days and not pasture at all.

There are a number of cost-effective options for the landowner with a small number of acres and animals. The following options are best when water and power sources are nearby. For those landowners with more remote watering locations, see additional options on the last page.



## Access Ramp/Water Gap to Streams and Ponds

An access ramp is the least improvement that can be made to a stream or pond. Ramps can be extended for stream crossings, but may still cause reduced water quality and animal health concerns. Animals prefer firm footing and easy access. Ramp features include:

- Gentle slopes, about 1 foot drop for every 6 feet of length
- Pit run gravel that's 1.5 feet thick and 10 feet wide
- Geotextile fabric or polygrid underneath gravel to prevent gravel from mixing with mud
- Fence to restrict animals to small area of access

## Water Hauling

A truck, with a storage tank and a removable stock tank in back, is a time-tested method. Water hauling features include:

- Water source that can be routinely relocated throughout pastures
- System that is useful in rotational grazing
- Manure that is evenly distributed

## Nose Pumps

Nose pumps are the lowest-cost pumping system available. Animals provide the power by pushing a lever with their noses. Each stroke pumps about a pint of water from a hose in the creek to a holding bowl. Nose pump features include:

- Capacity of 30 head of cattle or equivalent per pump.
- Water pumped 26 feet high or 125-foot run in a 1-inch hose or pipe.
- 1-2 day training period for animals to learn system. (Small calves and others may be unable to use pump.)
- Flexibility to move pump from pasture to pasture. (Locate pumps away from creeks to buffer any manure or runoff problems around pumps.)
- Maintenance needed. Check daily. Protect from frost or remove in winter.

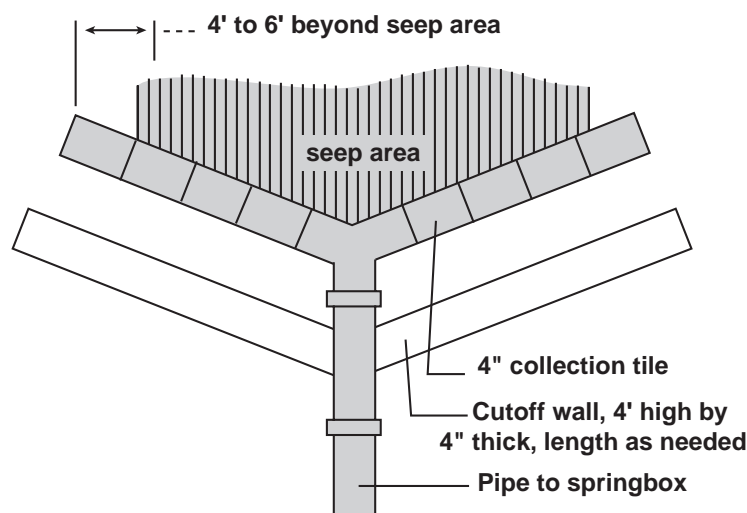


USDA Natural Resources Conservation Service

## Pipeline

Above-ground or buried pipeline (such as rigid plastic, flexible plastic, and galvanized iron) provides an economical way to provide water if you have a well or are on a public water system. However, pipelines do require more design considerations such as pipeline material, length, elevation differences, and water pressure. A one-way valve should be installed in the line to prevent backflow to your well or rural water system. Pipeline features include:

- Flexibility to supply several paddocks, an ideal setup for the pasture manager. A hydrant, located where four paddocks meet, can supply all four with a garden hose. Pipeline can be placed along lanes.
- Underground pipe is easy to install with a ditch witch on most soils. However, stony soils can be a real chore that may require a backhoe.
- Pipe buried below the frost line and frost-free hydrants can provide water during cold weather.
- Maintenance is needed. Check daily. Drain at end of the season.

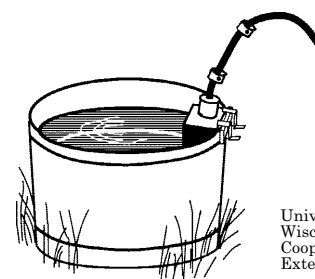


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## Spring Development

Springs are formed when water moving through rocks or soil is forced out of the ground. These areas are easily developed. Spring development features include:

- Water that is often clean and cold. However, water can be easily contaminated.
- Watershed above spring that should be protected. Test water quality to be sure it meets animal health guidelines.
- Low cost compared to a pond or a well.

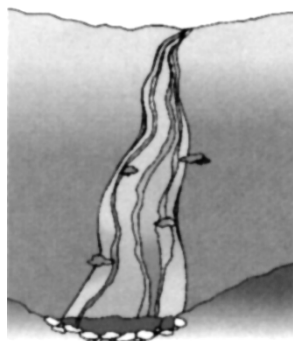


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## Make Your Own Water Tank

A low cost water tank can be made from a plastic 30- to 55-gallon barrel that is cut in half, installed with a float, and connected to a pipeline system. Make sure the previous content of the barrel was nontoxic. Locate the barrel close to the water source and on high ground to reduce mud. Place hoses in a manner that is safe for animals. Larger tanks can be made from used heavy equipment tires. For details on making used tire tanks, see the USDA Natural Resources Conservation Service design, *Trough (Used Heavy Equipment Tire)*.

## Here is a summary of watering systems:



Montana Stream Management Guide

Stock Watering Option	Impact on Animals and Water Quality	Cost (1993 prices)
<b>Surface Water Sources</b>		
Access ramp	Some animal health and production concerns. Reduced water quality.	\$600, plus fence \$100/year maintenance
Nose pump, Stream-powered pump	Some training required. No negative effect on animal health or water quality.	\$350-\$450 per pump, plus fence \$50/year maintenance
Stream-powered pump (Hydraulic Ram, etc. Have specific flow and elevation needs.)	Noisy. If return discharge avoids erosion and animal contact, no negative effect on animal health or water quality.	\$500-\$1,000, plus fence and trough \$50/year maintenance
<b>Groundwater Sources</b>		
Plastic pipeline	No negative effect on animal health or water quality.	\$1-2 per pipeline foot, plus troughs \$50/year maintenance
Solar-powered pump	No negative effect on animal health or water quality.	\$2000-\$6,000 for solar equipment, tank, fence, and pad
Spring development	No negative effect on animal health or water quality.	\$700, plus fence and trough \$50/year maintenance
Water hauling	No negative effect on animal health or water quality.	Cost of truck, tanks, and gas
Wind-powered pump	No negative effect on animal health or water quality.	\$5000-\$6,000 for windmill, tank, fence, and pad

Source: Adapted from Pasture Water Systems, Alberta Agriculture, Food and Rural Development



Assistance is available on stock watering, fencing, and ways to meet water quality standards from:

- The local soil and water conservation district (SWCD), USDA-Natural Resources Conservation Service (NRCS), and local watershed council may provide on-site technical advice and cost-share funding for stock watering that protects near stream areas. Contact your local SWCD, NRCS, and watershed council offices for details.

